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| 10/726,330 | 12/02/2003 | Tetsuya Miyazaki | 51214/DBP/T360 | 3666 |
| 23363 | 7590 | 11/29/2006 | EXAMINER | |
| CHRISTIE, PARKER & HALE, LLP | | | KIM, DAVID S | |
| PO BOX 7068 | | | ART UNIT | |
| PASADENA, CA 91109-7068 | | | PAPER NUMBER | |
| | | | 2613 | |

DATE MAILED: 11/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/726,330

Applicant(s)

MIYAZAKI, TETSUYA

Examiner

David S. Kim

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/2/03, 2/9/04, 5/20/04, 5/31/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-11 and 16-22 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because all instances of the term “selfcorrelator” are relatively uncommon compared to the more common term “autocorrelator”. As a remedy, Examiner respectfully suggests amending the drawings so that instances of the term “selfcorrelator” are replaced with the term “autocorrelator”.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
Similar to the drawing objection above, all instances of the terms “selfcorrelator” and “selfcorrelation” are relatively uncommon compared to the more common terms “autocorrelator” and “autocorrelation”. As a remedy, Examiner respectfully suggests amending the specification so that instances of the terms “selfcorrelator” and “selfcorrelation” are replaced with the terms “autocorrelator” and “autocorrelation”, respectively.

Appropriate correction is required.

Claim Objections

4. **Claims 1, 3-5, 8-9, 12-16, 19, and 21** are objected to because of the following informalities:

In **claims 1, 3-5, 8-9, 12-16, 19, and 21**, similar to the drawing objection above, all instances of the terms "selfcorrelator", "selfcorrelation", and "selfcorrelate" are relatively uncommon compared to the more common terms "autocorrelator", "autocorrelation", and "autocorrelate". As a remedy, Examiner respectfully suggests amending these claims so that instances of the terms "selfcorrelator", "selfcorrelation", and "selfcorrelate" are replaced with the terms "autocorrelator", "autocorrelation", and "autocorrelate", respectively.

Appropriate correction is required.

Claim Warning

5. Applicant is advised that should **claims 16-18** be found allowable, **claims 19-20 and 22** will be objected to under 37 CFR 1.75 as being substantial, respective duplicates thereof, and vice versa. When claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. **Claims 1 and 12** are rejected under 35 U.S.C. 102(a) as being anticipated by Wielandy et al. ("Real-time measurement of accumulated chromatic dispersion for automatic dispersion compensation", hereinafter "Wielandy").

Regarding **claim 1**, Wielandy discloses:

An optical receiver comprising:

a dispersion compensator (TDC-1 in Fig. 2) having variable dispersion compensation to compensate chromatic dispersion of a signal light input from an optical transmission line;

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a selfcorrelator (autocorrelator) to selfcorrelate a signal light output from the dispersion compensator; and

a controller (feedback circuit) to control the dispersion compensator to increase (Fig. 4) the selfcorrelation of the optical selfcorrelator.

Regarding claim 12, claim 12 is a method claim that introduces limitations that correspond to the limitations introduced by apparatus claim 1. Therefore, the recited means in apparatus claim 1 read on the corresponding steps in method claim 12.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 2-3 and 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wielandy in view of Adams et al. (U.S. Patent No. 6,889,347 B1, hereinafter "Adams").

Regarding claim 2, Wielandy does not expressly disclose:

The optical receiver of claim 1 further comprising a transmission error rate information calculator to calculate information indicating a transmission error rate of the optical transmission line out of the signal light output from the dispersion compensator, wherein the controller controls the dispersion compensator to decrease the transmission error rate.

However, such a transmission error rate information calculator is known in the art, as shown by Adams (e.g., Fig. 3, raw BER monitor 300 and control circuitry for the compensator, col. 4, l. 28-47). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate these transmission error rate information calculator teachings in the apparatus of Wielandy. One of ordinary skill in the art would have been motivated to do this to provide an additional/alternative means for controlling dispersion compensation in the case that the control means of Adams employs an

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indirect indicator of the proper setting for a dispersion compensator (Adams, follow the example of col. 2, l. 46-53)

Regarding claim 3, Wielandy in view of Adams discloses:

The optical receiver of claim 2 wherein the controller controls the dispersion compensator to increase the selfcorrelation of the optical selfcorrelator (Wielandy, Fig. 4).

Wielandy in view of Adams does not expressly disclose:

wherein the controller *then* controls the dispersion compensator to decrease the transmission error rate according to output from the transmission error rate information calculator (emphasis Examiner's).

However, notice that the apparatus of Wielandy in view of Adams already incorporates the transmission error rate information calculator. If one were to employ it at some time, one could obviously do so before, during, or after the controller controls the dispersion compensator to increase the selfcorrelation of the optical selfcorrelator. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ the transmission error rate information calculator after the controller controls the dispersion compensator to increase the selfcorrelation of the optical selfcorrelator. One of ordinary skill in the art would have been motivated to do this in the case the transmission error rate is not minimized after the controller controls the dispersion compensator to increase the selfcorrelation of the optical selfcorrelator (the teachings of Adams is focused on minimizing the error rate, col. 4, l. 28-47).

Regarding claims 13-14, claims 13 and 14 are method claims that introduce limitations that correspond to the limitations introduced by apparatus claims 2 and 3, respectively. Therefore, the recited means in apparatus claims 2-3 read on the corresponding steps in method claims 13-14.

10. **Claims 4 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wielandy in view of Adams as applied to the claims above, and further in view of the admitted prior art (hereinafter the "APA").

Regarding claim 4, Wielandy in view of Adams discloses:

The optical receiver of claim 2 wherein the dispersion compensator comprises a dispersion compensator having variable amount dispersion compensation (Wielandy, TDC-1 in Fig. 2); and wherein the controller controls the amount of dispersion compensation of the dispersion compensator so that the selfcorrelation of the optical selfcorrelator becomes larger (Wielandy, Fig. 4), and controls the dispersion of the dispersion compensator so that the transmission error rate becomes smaller (Adams, col. 4, l. 28-47).

Wielandy in view of Adams does not expressly disclose:

The optical receiver of claim 2 wherein the dispersion compensator comprises a dispersion/*dispersion slope* compensator having variable amount dispersion compensation *and variable dispersion slope*; and wherein the controller controls the amount of dispersion compensation of the dispersion/*dispersion slope* compensator so that the selfcorrelation of the optical selfcorrelator becomes larger, and controls the *dispersion slope* of the dispersion/*dispersion slope* compensator so that the transmission error rate becomes smaller (emphasis Examiner's).

However, dispersion slope compensators (APA, p. 1, l. 18-29) are known in the art. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to incorporate dispersion slope compensators in the apparatus of Wielandy in view of Adams. One of ordinary skill in the art would have been motivated to do this since it is known that one may have to compensate for dispersion slope in optical transmission systems (APA, p. 1, l. 14-18).

Regarding claim 15, claim 15 is a method claim that introduces limitations that correspond to the limitations introduced by apparatus claim 4. Therefore, the recited means in apparatus claim 4 read on the corresponding steps in method claim 15.

Allowable Subject Matter

11. Claims 5-11 and 16-22 are allowed.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dinu et al. is cited to show the determination of an amount of chromatic dispersion by using an optical

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autocorrelator (Figs. 2, 5A-5E). Giannone et al. is cited to show the application of an autocorrelator after variable dispersion compensation (Fig. 10). Vohra et al. is cited to show the application of an autocorrelator after variable dispersion compensation (Fig. 4, col. 4, l. 1-10). Knox et al. is cited to show variable dispersion compensation (Fig. 4) and an autocorrelator (Figs. 7-8). Ranalli is cited to show dispersion compensation based on an autocorrelation function (abstract). Kikuchi is cited to show the details of an exemplary autocorrelator. Ludwig et al. is cited to show the application of an autocorrelator after dispersion compensation (p. 1406, col. 1, 1st full paragraph). Taira et al. is cited to show the details of an exemplary autocorrelator.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK



KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER